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Potential of Dried Egg Yolk as a Source of Immunoglobulins to Control *Salmonella* in the Gastrointestinal Tract of the Broiler Chicken

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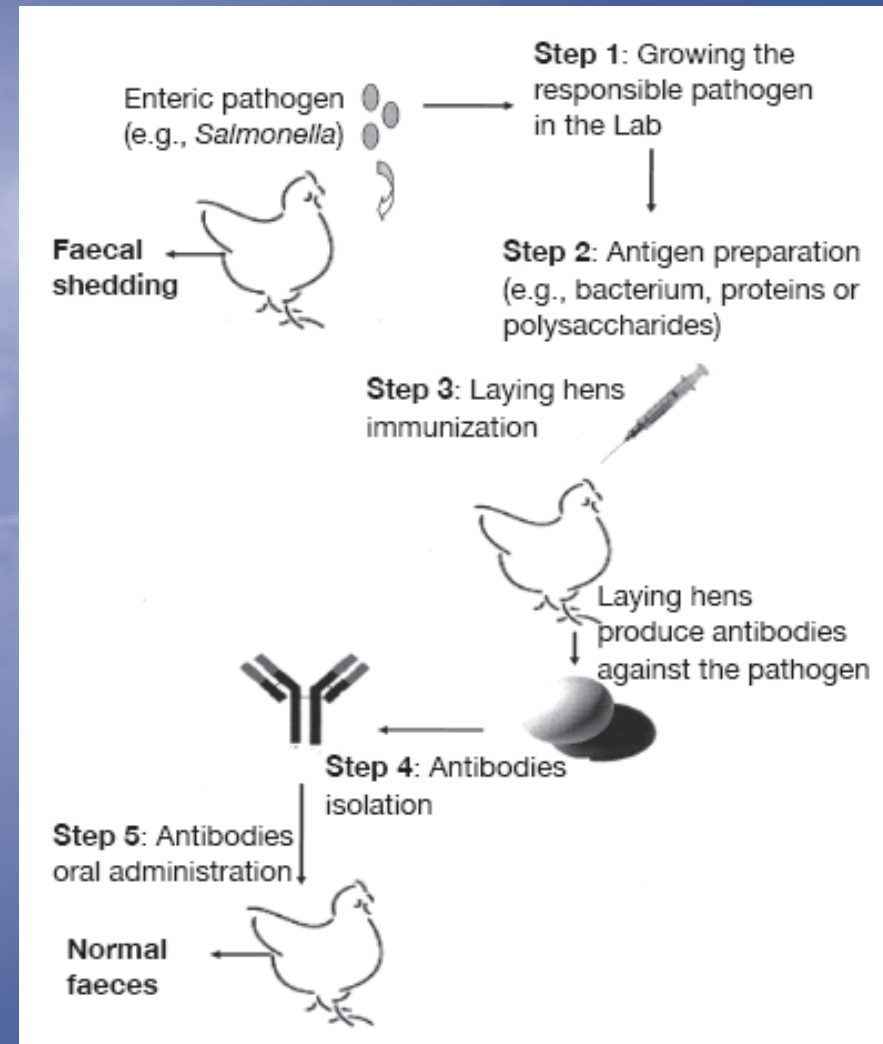
3 Fund for the Research in Industry and Agronomy, Belgium

Egg yolk immunoglobulins : IgY

- IgY : promising tool of establishing **passive immunity** against enteric pathogens in poultry
- IgY against *Salmonella* ?



Sensitivity to gastrointestinal conditions ?



Approach

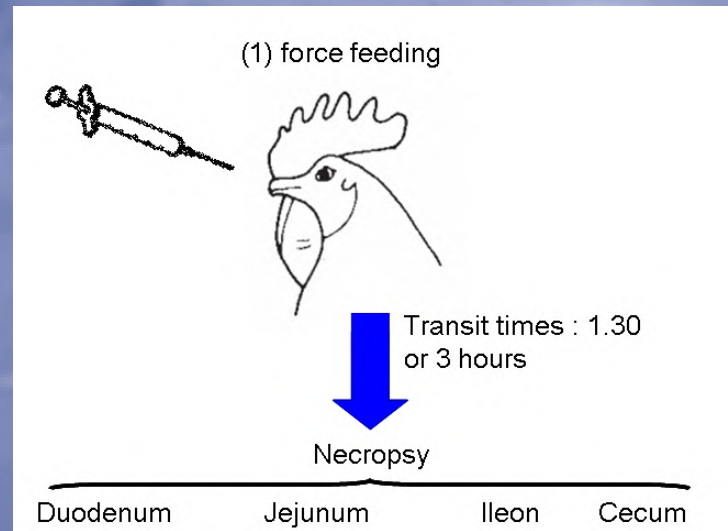
- Objective : Evaluate the gastrointestinal stability of IgY
 - Egg yolk preparations
 - Freeze-dried yolk powder (FYP)
 - Spray-dried yolk powder (SYP)

Whole yolk powders

 - Freeze-dried water-soluble fraction of yolk powder (WSFP)
 - *Semi-purified immunoglobulins*
- Hypotheses :
 - IgY sensible to digestion ? → WSFP
 - Protective potential of yolk ? → FYP and SYP

Approach (2)

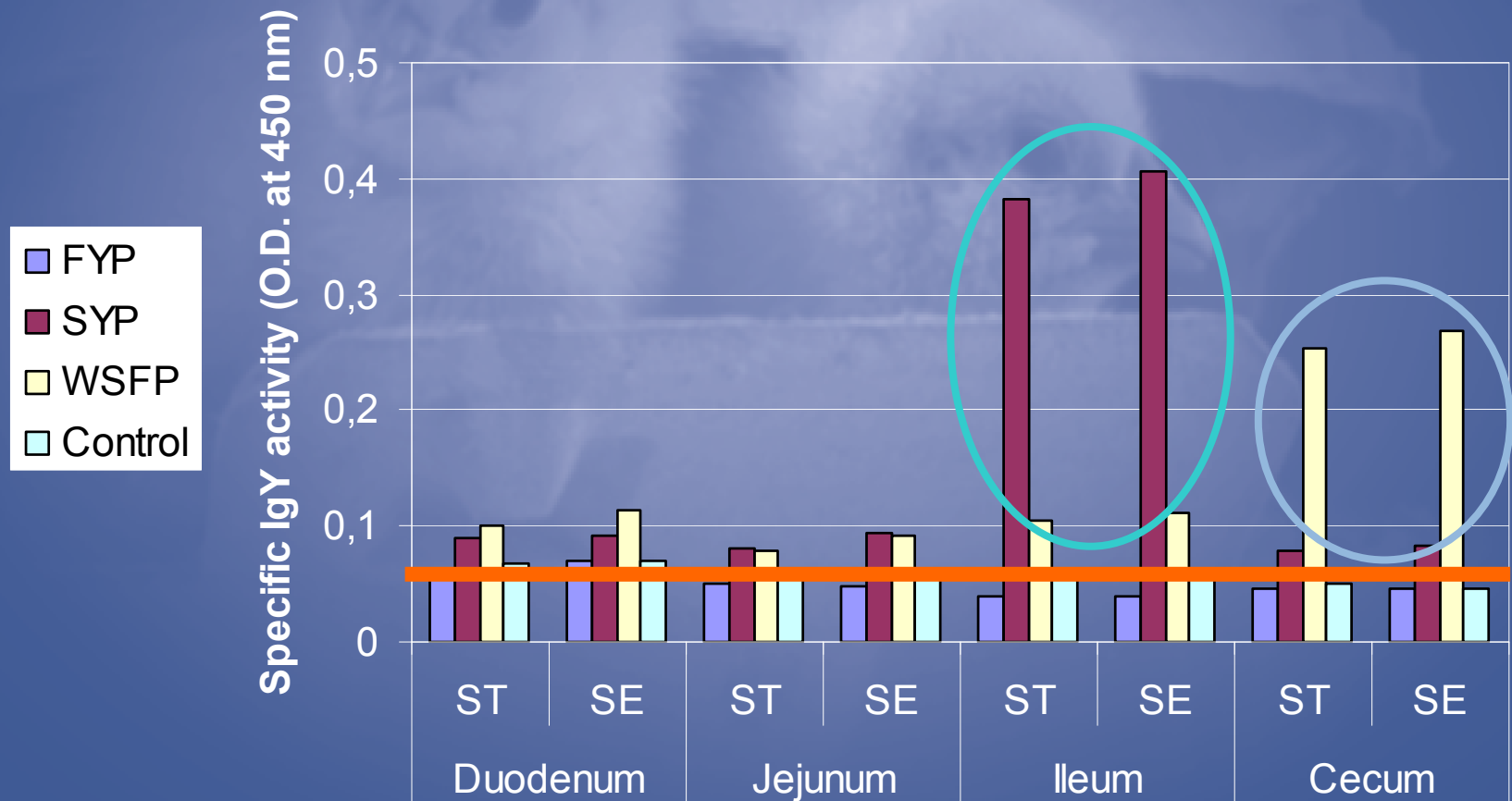
- **Force-feeding assay**

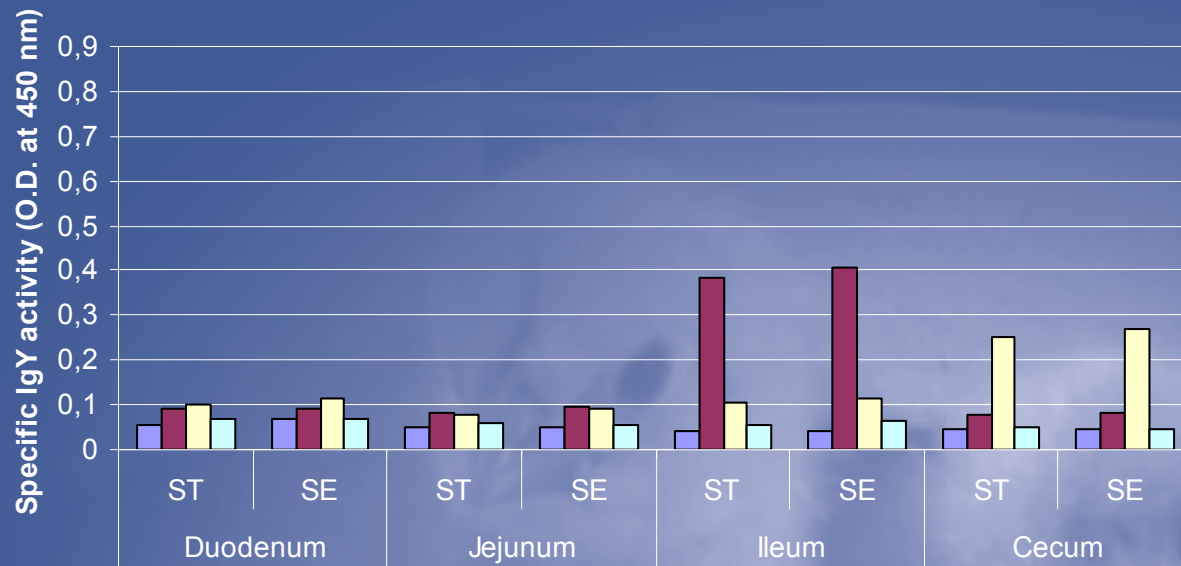


- **Immunological characteristics of feeds :**
 - Control : no antibodies
 - IgY level in FYP = IgY level in SYP
 - IgY level in WSFP >>

What in intestine ?

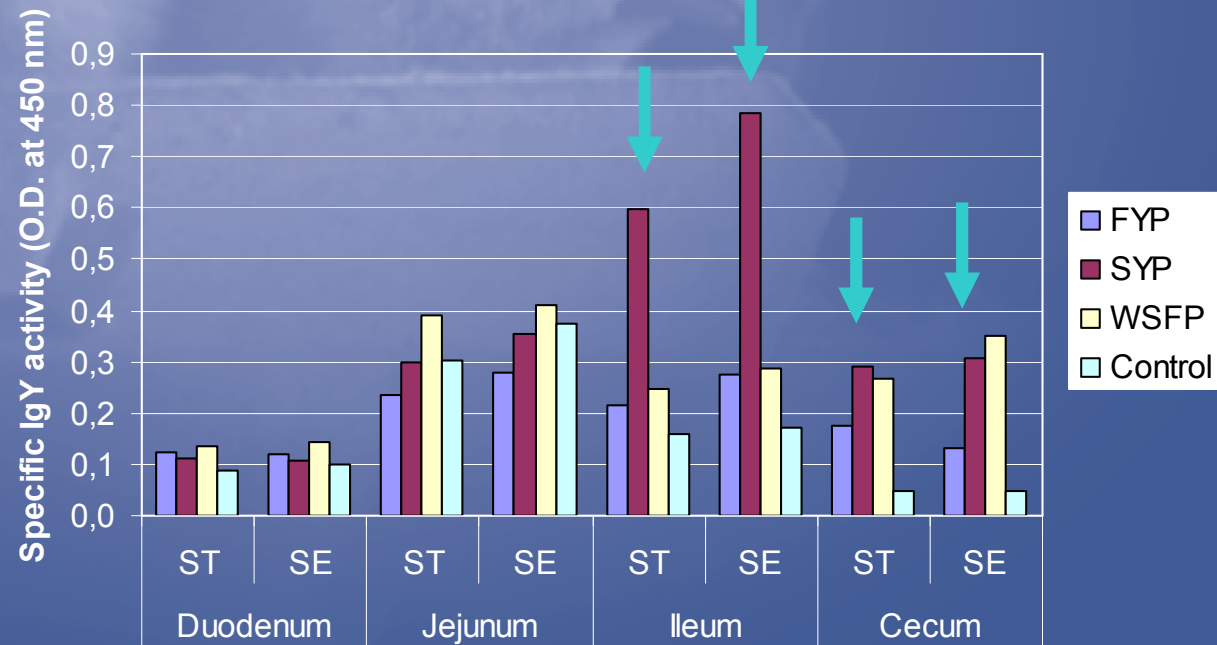
- ELISA detection of undigested anti-*Salmonella* IgY





**Undigested
antibodies**


**Partially digested
antibodies (F(ab)₂
fragments)**



Conclusion

Only **partial resistance** to digestive conditions when IgY distributed in dried egg yolk

Even if protective function of yolk (SYP)



Need for **additionnal protection** to maximize the anti-*Salmonella* effect of the feed additive

Acknowledgments



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For further information

Please contact marcq.c@fsagx.ac.be. More information on this and related projects can be obtained at www.fsagx.ac.be/zt.